



STATISTICAL PRIMER

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ADJUSTED RATES

Every now and then we encounter in the literature curious figures called adjusted rates which are supposed to inform us about something and arouse our interest. All they arouse in many people is suspicion. Why, comes the cry from the novice, aren't the simple rates good enough? Why should anyone want to adjust rates in the first place? And isn't something being covered up in the adjustment?

No, the practice is not suspect. Embarrassing truths are not being hidden. And simple, crude rates may not give us the information we need to decide some issue. If the decision involves a comparison among several populations, then there is every reason to compute adjusted rates. Indeed, adjusted rates exist to be used to make comparisons among populations.

In this paper we set out a rationale behind adjusted rates. We will, first, introduce rate adjustment by addressing a set of questions aimed at crude rates and at the so-called direct method; second, describe the indirect method; third, discuss some general principles; and finally, give a few references.

Crude Rates

What is a crude rate? It is the relative frequency with which some event occurs in a study population, and it commonly takes a standard form such as a number per 100,000. If death were the event and Hope County, N.C. the study population, then the number of deaths per 100,000 population would be the county's crude death rate.

What are the imperfections of crude rates? We must be careful when we use them to compare populations, because crude rates may lead us to wrong conclusions. A crude rate may be misleading if some subset of a population is over or under represented or has an aberrant number of occurrences of the event of interest. Crude rates may not represent accurately the health status of populations. In some applications, crude rates therefore do not permit clear comparisons among study populations.

When should we use crude rates? We should use crude rates whenever we study an absolute problem, such as mortality or disease. Crude rates then measure human suffering. They are plain calls for health services, and they carry an unavoidable moral demand: Serve them. We cannot admit any argument, statistical or otherwise, that distracts us from that moral reality.

When should we adjust rates before comparing populations? We should compute adjustments whenever we suspect that demographic peculiarities in the different populations affect the chances of the event's occurrence. For example, birth rates in two counties may differ greatly because one county has a disproportionate number of young women. Age adjusting the two birth rates to a standard population removes the distorting effects of the dissimilar age